

(2) optionally introducing a free radical initiator and introducing an olefinic carboxylic acid or anhydride or derivative thereof into the extruder to form the polymeric toughening agent;

(3) removing excess unreacted olefinic carboxylic acid or anhydride and isolating the polymeric toughening agent; and

(b) melt-blending the polymeric toughening agent produced in step (a) with a polyamide or another ~~non-olefinic~~ ^{non-olefinic} or olefinic material in an extruder, internal mixer or rubber mill at a temperature sufficient to melt the blend to form the polymeric composition.

AS
b
ACe 13.17. (Amended) The process of claim 14 wherein the olefinic carboxylic acid or anhydride is maleic anhydride and the polyamide is selected from nylon 6,6 or nylon 6.

Please add claim 18.

A77B 18. Fabricated articles made from the polymeric composition of any one of claims 8, 9 or 10.

REMARKS

In the Office Action, the Examiner rejected claims 1 and 8-16, and noted that claims 2-7 and 17 would be allowable. Applicants have hereby amended claim 1 by incorporating the subject matter of claim 2 into claim 1, namely that component (c) is present in an amount of 0.9 to 5 wt%. Therefore, new claim 1 should be allowable.

Claim 2 was cancelled accordingly.

Claims 3-7 remain dependent on newly amended claim 1, therefore they should also be allowable. Claim 6 was amended to recite that the amount of component (c) is from 0.9 to 2 wt%, to make it consistent with new claim 1.

Claim 8, which is ultimately dependent on new claim 1 should also be allowable for the same reason as above.

Claim 9 was amended to recite that component (c) is present in an amount of 0.9 to 5 wt%. Therefore, new claim 9 should also be allowable. Claim 10 was cancelled, whereas claims 11 and 12 depend from new claim 9.

33

a

Claim 14 has been amended to incorporate the subject matter of claim 16, which was found allowable. Thus, new claim 14 should now be allowable. Claim 15 depends from claim 14, therefore it is allowable as well. Claim 16 has been cancelled.

Claim 17 has been amended to remove the double claim dependency. Also, claim 17 is now dependent on claim 14, and therefore should be allowable.

Claim 18 is new and is dependent on claims 8, 9 or 10. Support for fabricated articles is found at page 7 lines 14-15 and page 9 lines 1-4.

In view of the foregoing, allowance of the above-referenced application is respectfully requested.

Respectfully submitted,



ROBERT B. STEVENSON
ATTORNEY FOR APPLICANTS
REGISTRATION NO. 26,039
TELEPHONE: (302) 992-6824
FACSIMILE: (302) 992-2953

Dated: 6-27-01



VERSION WITH MARKINGS TO SHOW CHANGES MADE

In showing the changes, deleted material is shown as [], and inserted material is shown ____.

IN THE SPECIFICATION:

ABSTRACT OF THE DISCLOSURE

The present invention relates to polymeric co-grafting of massing polymers and copolymers of ethylene and one or more α -olefins having at least 4 carbon atoms. The co-grafts are useful as tougheners for polyamides.

IN THE CLAIMS:

1. (Amended) A polymeric toughening agent useful for improving the impact properties of polymeric compositions, comprising,
 - (a) a copolymer of ethylene with one or more -olefins having at least 4 carbon atoms and having a density of 0.930 to 0.880 g/cc and a melt index (MI) of 0.01 to 50 dg/min at 190°C, 2.16 Kg;
 - (b) a massing polymer selected from a copolymer of ethylene with one or more -olefins having at least 3 carbon atoms and having a density of 0.850 to 0.880 g/cc and an MI of .01 to 50 dg/min at 190°C, 2.16 Kg wherein the ratio of (a) to (b) is 10:90-90:10; and
 - (c) [.05]0.9-5 wt % relative to (a) and (b) of a grafted monomer covalently bonded to (a) and (b) selected from an olefinic carboxylic acid or anhydride or derivative thereof.
6. (Amended) The polymeric toughening agent of claim 1 wherein component (a) has a density of 0.90 to 0.910 g/cc and an MI of 0.5 to 5 dg/min and component (b) has a density of 0.86 to 0.87 g/cc and an MI of 0.2 to 2 dg/min and wherein component (c) is [0.3]0.9 to 2 wt % relative to (a) and (b).
9. (Amended) A polymeric composition having improved impact properties, comprising:

a

- (1) a polymeric toughening agent useful for improving the impact properties of the polymeric composition, comprising,
 - (a) a copolymer of ethylene with one or more -olefins having at least 4 carbon atoms and having a density of 0.930 to 0.880 g/cc and an MI of 0.01 to 50 dg/min at 190°C, 2.16 Kg;
 - (b) a massing polymer selected from a copolymer of ethylene with one or more -olefins having at least 3 carbon atoms and having a density of 0.850 to 0.880 g/cc and an MI of .01 to 50 dg/min at 190°C, 2.16 Kg wherein the ratio of (a) to (b) is 10:90-90:10; and
 - (c) [0.05]0.9-5 wt % relative to (a) and (b) of a grafted monomer covalently bonded to (a) and (b) selected from an olefinic carboxylic acid or anhydride or derivative thereof; and
- (2) an olefinic or non-olefinic material.

14. (Amended) A process for producing a polymeric composition having improved impact properties, comprising:

- (a) preparing a polymeric [non-massing] toughening agent useful for improving the impact properties of the polymeric composition as claimed in Claim 1, by:
 - (1) feeding both a massing polymer and an ethylene- -olefin at a ratio of 10-90 wt % ethylene- -olefin to massing polymer into the feed throat of a twin screw extruder at a barrel temperature of 150-400°C;
 - (2) optionally introducing a free radical initiator and introducing an olefinic carboxylic acid or anhydride or derivative thereof into the extruder to form the polymeric toughening agent;
 - (3) removing excess unreacted olefinic carboxylic acid or anhydride and isolating the polymeric toughening agent; and
- (b) melt-blending the polymeric [combining the non-massing] toughening agent produced in step (a) with a polyamide or another on-olefinic or olefinic material in an extruder, internal mixer or rubber mill at a temperature sufficient to melt the blend to form the polymeric composition.

a

[(1) a polyamide to form, under suitable reaction conditions, the polymeric composition, or

(2) another non-olefinic material or olefinic material to form the polymeric composition.]

17. (Amended) The process of claim 14 [16] wherein [the polymeric toughening agent is selected from the composition of claim 1 and] the olefinic carboxylic acid or anhydride is maleic anhydride and the polyamide is selected from nylon 6,6 or nylon 6.

a